

From the Author.



Civilisation and Cerebral Development.

SOME OBSERVATIONS

ON THE

INFLUENCE OF CIVILISATION UPON THE DEVELOPMENT OF THE
BRAIN IN THE DIFFERENT RACES OF MAN.

BY

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CIVILISATION AND CEREBRAL DEVELOPMENT.

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IN my last communication to this Society, *On the Psychological Differences which exist among the Typical Races of Man*, I dwelt on the importance of assiduously studying, and of carefully contrasting and comparing, their cerebral organisations, as a means to the better understanding and elucidation of the mental differences which exist among and characterise them. I had then, and I have still, to lament and regret that, notwithstanding the labours of Gratiolet, and the chart which he may be said to have provided for our guidance as a standard for comparison, so little has been done in the prosecution of such an interesting subject of inquiry. It must be confessed, that the brains of the typical human races have yet to be scrupulously examined, and to be carefully contrasted and compared with each other; and that ethnic psychology is still a *desideratum*. In the present paper, I wish to submit to your consideration some observations on the influence of civilisation,—that is, of outward circumstances, social states, and intellectual culture, on the development of man's cerebral organisation. But, in the first place, before proceeding to do this, and as a basis for my observations, I would premise the following postulates:—1st. That the brain or the encephalon is the *material* organ of the mind; in other words, that the vesicular matter of the encephalic ganglia is the *material substratum*, through which all psychical phenomena of whatever kind, and among all the races of mankind, are manifested in this life.

2nd. That there exists a close correspondence in form and size between the cerebrum or hemispheres of the brain and its outward covering—the *skull*; in other words, that the development of the brain moulds and fashions, giving configuration, form or shape, and volume to its bony envelope, so that the varying forms of the human cranium indicate, as outward and visible signs, with certain well understood qualifications, corresponding differences or changes in shape and size of the cerebral substance within.

3rd. That the *genus homo* is one, and that all the races of the great family of man are endowed with the same intuitions, sensational, perceptive, and intellectual,—the same mental activities; in other words, that they all have, as constituent elements, the germs or original principles, *in common*, of a moral, religious, and

intellectual nature; the mental differences, which they exhibit, being differences *in degree and not of kind*.

Now the antiquity of man, since the publication of Sir Charles Lyell's work, on the bearing of the geological evidence upon it, has been the occasion of much discussion. But, beyond the three marked epochs of his history, the ages of stone, of bronze, and of iron, the subject is foreign to our present inquiry, and even upon those, although affording indisputable evidence of his gradual and ascensive progression, it is not my intention to dwell; for I shall confine myself to the historic period of his existence here upon earth. And, as to the origin, or rather the creation of man, whatever may be the opinion entertained in regard to his *monogenesis* or his *polygenesis*, one thing is certain, that from all historic times, there have existed, and do still exist, aboriginal and typical races of man widely differing from each other, and easily distinguishable by well-marked physical and psychical characters. Such, for instance, are the black Negroes of Africa, the yellow Mongols of Asia, the red men of America, and the white men of Europe. The inquiry, indeed, is a most interesting one, into the true zoological relationship between these different races so dissimilar in colour, features, bodily configuration, stature, habits of life, and moral and intellectual cultivation; so that on a survey of all the nations on the habitable globe, our minds are startled, and, well may we ask, "Are the fair Circassian and the jet black African, the olive Malay, and the red American, the dusky New Zealander, and the florid Saxon, all of *one* original stock? Did the Patagonians, whose average height is nearly six feet, spring from the same parents as the pigmy Bosjesmans, whose usual height is under five, that of the females rarely much exceeding four? Are the fat, blubber-fed, flat-visaged Esquimaux even most distantly related to the lean, date-eating, hatchet-face Arab? Does the Bosjesman, who lives in holes and caves, and devours ants' eggs, locusts, and snakes, belong to the same species as the men who luxuriated in the hanging gardens of Babylon, or walked in the olive grove of Academe, or sat enthroned in the imperial homes of the Cæsars, or reposed in the marble palaces of the Adriatic, or held sumptuous festivals in the gay *salons* of Versailles? Can the grovelling Wawa, prostrate before his fetish, claim a community of origin with those whose religious sentiments inspired them to pile the prodigious temples of Thebes and Memphis, to carve the friezes of the Parthenon, or to raise the heaven-pointing arches of Cologne? That ignorant Ibo, muttering his all-but inarticulate prayer, is he of the same ultimate ancestry as those who sang deathless strains in honour of Olympian Jove, or of Pallas Athenè, or of those who, in purer worship, are chanting their glorious hymns or solemn litanies in the churches of Christen-

dom? That Alfouro woman, with her flattened face, transverse nostrils, thick lips, wide mouth, projecting teeth, eyes half-closed, by loose swollen upper eyelids, ears circular, pendulous, and flapping; the hue of her skin, of a smoky-black, and, by way of ornament, the septum of her nose pierced with a round stick some inches long,—is she of the same original parentage as those whose transcendent and perilous beauty brought unnumbered woes on the people of ancient story, convulsed kingdoms, entranced poets, and made scholars and sages forget their wisdom? Do they all spring from one common mother? Were Helen of Greece, and Cleopatra of Egypt, and Joanna of Arragon, and Rosamond of England, and Mary of Scotland, and the Eloisas, and Luras, and Ianthes, were all those, and our poor Alfouro, daughters of her, who was the fairest of all earth's daughters—Eve? The Quaicqua or Saboo, whose language is described as consisting of certain snapping, hissing, grunting sounds, all more or less nasal,—is he, too, of the same descent as those whose voices fulminated over Greece, or shook the Forum of Rome, or as that saint and father of the Church surnamed the 'Golden-mouthed', or as those whose accents have thrilled all hearts with indignation, or melted them with pity and ruth in the honoured halls of Westminster."*

But I shall not now enter upon the discussion, much less attempt the solution of this *questio vexata*, for I set out with the postulate that the *genus homo* is one, and that, of the great family of man, all the races are endowed with the same instinctive intuitions—the same mental activities, however differing in degree,—and that they all have the essential constituent elements, in common, of a moral, religious, and intellectual nature. But whether they are all descendants from one single pair of protoplasts, or whether they have descended from several distinct pairs, the fact of the unity of mankind, in the sense which I have just indicated, it is equally indisputable. And this unity, I believe with Professor Agassiz, to be a bond which every man feels more and more the further he advances in moral and intellectual culture, and which in this development is continually placed upon higher and higher grounds; so much so, that the physical relation arising from a common descent is finally entirely lost sight of, in the consciousness of the higher moral obligations, which are paramount and universal.

Nor, indeed, ought it ever to be forgotten that the moral rights of man have their foundation in his moral nature, so that if it once be admitted that the degraded and too often despised African

* Vide Introductory Lecture, entitled "Our Institution and its Studies". By Dr. J. A. Symonds. Bristol: 1850.

Negros have the hearts and the consciences of man—a moral and religious nature like our own—and who can gainsay it?—it may then be emphatically asked, whence comes the right of others to deprive them of their humanity, to convert them into goods and chattels, and to treat them as wild fowl and cattle? for, most assuredly, the tests are and ought to be the same, by which we estimate the true relations of the Negro, the Bushman, and the Australian savage, to the cultivated European, as are those by which we every day recognise the claims of the outcast and the degraded amongst ourselves to a common humanity. And, however much our boasted intellectual superiority, on the one hand, and the physical and mental inferiority of the Negro, on the other, may be dwelt upon by some, there are others who share in the nobler aspirations of the great and philanthropic Dr. Channing for the future of the race; and not a few who believe, as Dr. Carpenter has remarked, that there are elements in the Negro character which have been deemed capable of working a considerable improvement on even Anglo-Saxon civilisation; nay, that many intelligent thinkers have come to the conclusion that the boasted superiority of the latter is, after all, more *intellectual* than *moral*, and that in purity and disinterestedness of the affections, and child-like simplicity and gentleness of demeanour, we have much to learn from the despised Negroes. I, for one, have faith in their social and moral endowments, and look forward hopefully to the *future* of the race, when emancipated from the fetters of slavery, and brought under the ameliorating and benign influence of a higher civilisation, more favourable to the development of their intellectual nature. At the same time, I maintain that it can only be after the effects of education, intellectual, moral, and religious, have been fairly tested, when the influence of a perfect equality in civilisation and social position has been ineffectively brought to bear upon the Negro race for several consecutive generations, that we shall be entitled to say that they are separated from us by an *impassable barrier*. Hitherto, among the civilised nations of the world, what chance have they had? Despised as a race in the Northern, and degraded and subjugated into slavery in the Southern States of America, how abject has been, and, at this very time, how deplorable and wretched is their social position.

But to proceed from this digression. It is admitted on all hands that from time immemorial there have always existed, besides that of the rude and savage hordes of hunters and fishers, two forms or phases of civilisation, the *nomadic* or *pastoral*, and the *agricultural*; and that, whilst, on the one hand, the former is essentially *stationary* in its character, the latter, on the other, is strikingly and eminently *progressive*. “The earliest traditionary

records which we possess of the state of the world when the earth was first peopled, shows that there existed a nomadic population, who lived in tents, and artificers who built cities—the earliest of all manufacturing towns. These two schemes of life, so far as we know, were contemporary. * The dwellers in tents had seen the dwellers in cities, but preferred their own wild independence. In the nomadic or pastoral mode of life, as the simple wants of the herdsman were so easily supplied, there was little inducement to the study of sciences, which promised no special benefit to himself. Necessarily a wanderer, according to needs of his herds, and, moreover, dependant upon them for his own subsistence, so long as there was unoccupied land enough to afford them herbage, there was nothing to induce a change in his mode of life. And, accordingly, although no law forbids alteration, the habits of the nomadic tribes of Asia, at the present day, differ little, if at all, from those of their ancestors; and the Turkoman, or Arab chief, still welcomes the stranger much in the same way that Abraham of old is reported to have done. But with the agriculturist, the case was widely different, and with him there were many inducements to progress. The implements required for the cultivation of the soil were more useful in proportion as they were more skilfully made, and iron, the best of all the metals for the purpose, needed science to extract it from the ore. A settled population required houses in which to store their implements and their corn; and for the building of these fresh tools and more science were requisite. The agriculturist, engaged all day in the labours of the field, had little time for fashioning his own tools, so that very soon a certain portion of the people devoted themselves to the business of supplying his wants. And thus luxuries which a wandering tribe could neither carry with them nor enjoy, were within the reach of a settled population. Trades could be carried on. The son learned the arts which the father had acquired, it was the natural order of things. He who had become rich with the produce of his tillage could exchange it with the tradesman for his wares, and so became possessed of two kinds of wealth, which descended together to his children. They who were so enriched by the thrift of their fathers could devote their time to intellectual culture, and thus science arose.”*

Now, as might be expected among the purely nomadic races, where civilisation is stationary, at a dead lock, so to speak, there exists a uniform sameness and a characteristic fixidity in the shape of the head, which is in striking contrast with what is seen to prevail among the agricultural races and the cultivated Euro-

* Vide Small Books on Great Subjects; the State of Man before the promulgation of Christianity. London, Pickering, pp. 29-30, 1848.

peans. For where civilisation is progressive, under the exciting and stimulating influence of outward circumstances, social status, and intellectual culture, there is increased activity among the faculties of the perceptive and intellectual consciousness, and, in consequence, a corresponding development of the nervous apparatus—the cerebral substance, through which they are manifested in this life.

And thus the contrast is both significant and striking, when the representative typical crania of the African or Australian savage, the Mongolian nomade, and the cultivated European, are compared with each other. And although it is the brain which is the organ of the mind, we must not forget that its *bony covering*, the *skull*, is the outward measure and index of the brain's development within, and that from it we are enabled fairly to estimate the relative size and comparative development of the three great divisions of the brain itself, the anterior, middle, and posterior lobes; and thus, among the typical races, to recognise *distinctive characters* impressed and stamped upon their varying crania as indisputable evidence of *degradation* or *elevation* of type. Thus, for instance, among savage tribes, where the head is relatively so small to the greatly developed bones of the face and protuberant jaws, the forehead is flat or low, narrow and retreating. It may be that the head is comparatively long, but then it is remarkably narrow in proportion to its length, as seen in the Negro, the Carib, or New Hollander; or, on the other hand, it may be short, but still the forehead is flattened and narrow, as in the Incas and Papoes. Now, cranial configurations such as these, and where the face, nose and jaws, ape-like, are all protuberant and projecting, speak a language which cannot be mistaken, and point to a history and a destiny, on which there is no occasion for me to dwell. For whenever and wherever ignorance and brutality, destitution and squalor, have for a long time existed, this prognathous type invariably prevails. It is not confined to the Negro of the Delta of Africa, but is equally characteristic of the Bushman and Australian savage, and may even be recognised in Ireland, in Leitrim, Sligo, and Mayo. So again, as opposed to this, there is a type of *elevation* among the European nations—the Saxons, Celts, and Scandinavians—where the jaws are upright and not projecting, and where the face scarcely, if at all, protrudes beyond the forehead, and where, too, in place of the narrow, low, and retreating forehead associated with largely developed, massive, and projecting bones of the face and jaws, we are struck with the symmetrical contour of the head, its size and lateral fulness, but above all with the elevation of the forehead, in proportion to the size of the face, and with its broad expansion and towering height, clearly indicating a harmonious development

of the whole brain, and a special fulness in the intellectual and moral regions.

But as physiological psychologists are agreed that the Cerebrum, or great hemispherical ganglia of the brain, are the instruments of the mind, the sole and exclusive seat of all intellectual action and volitional power, we must turn from the comparison of their bony coverings to that of the brains themselves, of the typical races. Now, when we do this, how strikingly are we at first impressed with the exact resemblance which they bear to one another. We see the same lobes, the same convolutions, and the three main divisions of the brain, into anterior, middle, and posterior lobes, are as distinctly and well defined in the one as in the other. But on a closer examination, and a more scrutinising survey, we find marked and palpable differences between them, not only in the relative size and development of these three cerebral lobes, but also differences in the size, character, and complexity of structure in many of their corresponding convolutions, the significance of which is more or less important, according to the psychical activities of which they are the seat, or with which they may be associated. But to be able to interpret these, and duly to appreciate the importance of the structural differences which we meet with in the brains of the typical races of man, involves and implies a knowledge of the functions of these cerebral parts, and of the nervous apparatus of the perceptive and intellectual consciousness, more precise and accurate than that, it must be candidly confessed, to which we have as yet attained. Still, we are not without some definite knowledge of the functions of the cerebral lobes as physical instruments, and, on this point, let me here state what are the views and convictions of my own mind—not hastily taken up; and although accordant with, not founded upon, the multiplied cranioscopical observations of Gall, Spurzheim, Combe, and Carus, but upon the facts of pathology and of developmental anatomy, comparative and human, viz., that the anterior lobes are the seat of the intellectual, the middle of the personal or individual, and the posterior of the social and affectional activities or attributes of the human mind. In other words, my own mind rests in the conviction that the anterior are the intellectual lobes of the brain, the seat of the intellectual faculties, the reasoning and reflecting powers; the middle lobes are the personal, the seat of the animal activities, of the individual or personal affections or attributes, and of the moral and religious intuitions of the mind; and that in the posterior lobes are seated the social and affectional activities and propensities, those endearing attributes which are the charm of our existence here, binding together in the bonds of affection, the ties of family, of friendship, of country, and of race. Moreover, I recognise

throughout the hemispheres of the brain, and in their tripartite division into anterior, middle, and posterior lobes, with Gratiolet, three stages or planes of development :—1, the inferior, or lowest, the *basilar* and *superciliary*; 2, the middle, or *median frontal*; and 3, the highest, the *coronal*, or *superior frontal*, the sole and exclusive prerogative of man. Nor do I hesitate to avow my belief that it is on the comparative evolution and size of the different cerebral lobes in these stages or planes of development that the individual character is mainly dependent, and that, while the middle or personal are the dominating lobes of the brain, as to the animal, moral, and religious activities of the man, it is the anterior which indicate the character of his intellectual bearing, and the posterior that of his social tendencies, propensities, and affections.*

* Since this paper was read, *The Lectures on Man; his Place in Creation, and in the History of the Earth*, by Dr. Carl Vogt, Professor of Natural History in the University of Geneva, edited by James Hunt, Ph.D., have been published. As confirmatory of my own views and opinions, I need scarcely say how well pleased I am to quote the following passages from Lecture IV :—“The cerebrum is unquestionably the seat of intelligence, consciousness, and will, consequently of all intellectual activity. There are normal conditions in which certain parts of the brain are less developed than others; and such conditions may be noted in the analysis of the intellectual functions. We may thus find in individuals of high intellect, this or that lobe of the cerebrum is more developed than another; that the convolutions on the surface are more distinctly and differently marked in eminent persons, than in persons of lower rank. Such investigations embrace the different races of man. We may call to our aid cases in which, from arrest of development, the brain has preserved its foetal type, in consequence of which the intellectual life approaches that of the animal. And a close examination of the cerebral structure of such idiots may teach us which are the special parts arrested in their development; and, by comparing with the obtained data the various manifestations of intellectual activity, we may perhaps arrive at some conclusions as regards the functions of the individual parts of the brain.”

“The three cranial vertebræ, viz., the frontal, temporal, and occipital, have been connected with the development of the three principal lobes, so that some authors distinguish frontal, parietal, and occipital races, in proportion as either of these organs predominate. The actual facts obtained from investigations of this kind seem to amount to this, that the anterior or frontal lobes are intimately connected with mental development. *Height, breadth, and shape* of the parts, must be taken into special consideration in forming an estimate of intellectual capacity.” On the three ascending planes of cerebral development, upon the existence of which I have dwelt in my *Essay on Physiological Psychology* (p. 86), Dr. Vogt observes :—“We might fairly assume three stories of these complicated frontal convolutions; the ground-floor rests immediately upon the roof of the orbits, whilst the upper story touches the top of the forehead. In poorly convoluted brains, these windings, viewed from the side, present three distinct superimposed folds; in richly convoluted brains they appear as closely intertwined plants, rendering the separation into three stories more difficult. The remarkable differ-

Further and more fully to discuss these ascensive planes of cerebral development would here be out of place ; but, I hope, enough has been said to enable us to appreciate, in some degree, the psychological significance and importance of the structural differences which we meet with among the convolutions of the brains of civilised and savage man. As the anterior lobes are the seat of the intellectual activities, fulness of development and complexity of structure are sure indications of *elevation* of type ; and the converse is equally true, as Gratiolet, from extended observations, has fully established, viz., that simplicity of structure and perfect symmetry of shape and arrangement, among the convolutions on both sides of the hemispheres are indisputable marks of *degradation* of function. He has demonstrated that on the three stages of frontal development, there exists among the lowest and the highest of the human races differences in size and complexity of structure in the convolutions and in the relations of the second or median, with both the inferior and superior stages of

ences exhibited by brains are especially shewn in the convolutions, and, above all, in those of the upper and middle folds. The length of the frontal lobe varies greatly, so that the fissure of Rolando changes its place either in a forward or backward direction. The complications in the shape and arrangement of the convolutions differ, not only in individuals, but even in the two hemispheres of the same brain. Assuming the absolute length of all the sulci of the frontal lobe of the brain of the mathematician Gauss equal to 100, we obtain for the brain of Fuchs, M.D., 96 ; for a woman of 29, about whose intelligence nothing is said, 85 ; for the brain of a common day-labourer named Krebs, 73 ; and for the brain of an idiot who died, aged 26, only 15, a diminution which accords with the hypothesis, that great development of the frontal convolutions, and consequently of the convolutions generally, is connected with the development of intelligence." After observing that the convolutions which form the parietal lobe appear to proceed from the posterior central convolutions, he says:—"They have the appearance of notched rolls, which may also be divided into three stories, the uppermost forming as it were only a fold of the central convolution. The second or middle convolution of the parietal lobe, which is mostly only seen on a side view of the brain, usually forms a curve, like a bent finger, around the parallel fissure ; and hence Gratiolet calls it the bent convolution—*plicourbé*. The third or lower, generally appears in the shape of a triangular knob wedged in between the branches of the horizontal arm of the Sylvian fissure, and corresponds in its position to the parietal eminence of the skull." He next points to the three stories in the temporal lobe, observing that, "in poorly convoluted brains, these stories are scarcely at all notched in the margin ; but in richly convoluted brains, the notches become secondary fissures, but rarely sufficiently deep to efface the original tripartition of the lobe." The occipital he considers in every respect the most difficult, in regard to the systemisation of its convolutions. In the human brain, its limits are only indicated by a very small perpendicular fissure, and it runs without any visible separation into the parietal and temporal lobes. He points out what Gratiolet terms the upper story of the convolutions of the posterior lobe, then the middle, and also distinguishes beneath these a third, which rests immediately upon the cerebellum.

development, which accord with, and, indeed, are found to indicate and correlate corresponding differences in their psychical activities. He dwells on the striking contrast which is presented between the simple, smooth, and symmetrical convolutions, in both the hemispheres, on the superior frontal regions of the brain, in the inferior ræces, and that of the unsymmetrical character, and of the great and intricate complexity of the same convolutions among those of the highest.

The illustrious Tiedemann is constrained to admit that in the brain of the Negro the anterior lobes are more pointed and narrow than in the European, and that the gyri and sulci in both hemispheres are far more symmetrical also, so that, in this respect, they resemble the brain of the ourang-outang. The brain is narrow, and its great deficiency is in its anterior lobes; the moral and religious regions are more fully developed, and so, too, are the posterior lobes, though not so fully as in the European. Tiedemann, indeed, dwells on the fact, that in the case of the Hottentot Venus who died at Paris, the narrowing of the anterior part of the hemispheres was still more remarkable than in the Negro.* “Fortunately,” says Professor Huxley, “Gratiolet has

* Dr. Carl Vogt, in his seventh lecture “On the Comparison of the German and Negro,” quotes the following remarks from Dr. Pruner-Bey, who, as Physician to the Viceroy of Egypt, had ample opportunities for observation on the brain of the Negro:—

“The narrow and elongated brain of the Negro always presents on the surface a brown coloration, reflecting from a considerable injection of venous blood. The superficial veins are very thick; the grey substance presents internally a clear brown coloration; the white substance is yellowish; the cortical grey substance which covers the hemispheres is less thick than in the white man. Viewed in front, the brain presents a rounded apex; viewed from above, the parts seem coarser and less manifold than in the White. The anterior and parietal convolutions seem less deep, flattened, excepting the third convolution, which rather protrudes on the frontal surface. On tracing the convolutions backwards, we find fewer of those parietal folds which render the brain in the White a perfect labyrinth. The convolutions on the middle lobe seem raised, but supine and coarse; the posterior lobe always appeared to me as flattened on the top as the anterior is at the base. The central mass is undoubtedly firmer and more consistent in the Negro than in the White. In the brain of the Negro the central gyri are like those of a fœtus of seven months, the second arc still less marked. By its rounded apex and less developed posterior lobe, the Negro brain resembles that of our children, and by the protuberance of the parietal lobes, that of our females. The shape of the brain, the volume of the vermis and of the pineal gland, assign to the Negro brain a place by the side of that of the white child.”

Dr. Carl Vogt further remarks—“That Husehke mentions some other differences. The Sylvian and Rolando fissures are more perpendicular than in the brain of the European; the anterior lobes are shorter, the gyri coarser, the chief anterior convolution broad, but all without islands. Husehke arrives at the conclusion, that in the Negro brain both the cerebrum and

also particularly described and carefully figured the brain of the Hottentot Venus, and his remarks respecting it are exceedingly important and instructive." "The convolutions of the brain," says Gratiolet, "are relatively little complicated. But what strikes one at once is the simplicity, the regular arrangement, of the two convolutions which compose the superior stage of the frontal lobes. These folds, if those of the two hemispheres be compared, present an almost perfect symmetry, such as is *never exhibited* by the normal brains of the Caucasian race. This regularity, this symmetry of the cerebral convolutions, involuntarily recalls the regularity and symmetry of the cerebral convolutions of the lower species of animals. There is in this respect, between the brain of white men and this Bosjesman woman, a difference such that it cannot be mistaken." After pointing out other differences, he concludes in these words:—"The brain of the Hottentot Venus is thus in all respects inferior to that of white men arrived at the normal period of their development. It can only be compared with the brain of a white who is idiotic from an arrest of cerebral development."

This instructive account, by Gratiolet, is peculiarly interesting to me, from the fact that in the days of my boyhood, I gazed with wondering eyes upon the same Hottentot Venus when she was publicly exhibited at Newcastle-upon-Tyne. Nor can I now, after the lapse of so many years, and on such an occasion as the present, be content simply with an expression of the regret which I feel, in saying, that I know of no other recorded case from the Hottentot race; nor even of a solitary one, either from among the Bushmen, a degraded caste of the Hottentot, or from the Australian race, with which to contrast and compare this admirable account from Gratiolet, for I cannot here refrain from reiterating what I said in my last communication:—

"To our shame be it spoken, that, in regard to the cerebral organisation of the typical races, so little has been done in the investigation of a subject so fraught with interest and pregnant with consequences of such deep importance to every psychological inquirer."

I hope, however, for the sake of science and our own credit, that this reproach will soon no longer exist, except among the things which have been, and that typical illustrations of the brain from the aborigines of different nations, will not be found wanting for examination, comparison, and study. Nay, more, I look for-

the cerebellum, as well as the spinal cord, present the female and infantile European, as well as the simious type. The resemblance of the Negro brain to that of the European female would still be greater, if they were not distinguished, the former by its length, and the latter by its breadth."—Vogt's Lectures, p. 182-3.

ward to the microscopical examination of the ultimate structure of the vesicular substance or grey matter of the brain in the typical races, as pregnant with the most interesting and instructive results. Already my friends Dr. Beale and Mr. Lockart Clarke have proved to demonstration, that *perceptible differences* exist in the minute anatomy of the grey matter of the convolutions in the brain of man, and that of the monkey and the highest anthropoid apes. Moreover, that among the inferior animals themselves of distinct or different species, as the dog, the cat, and the sheep, the structural differences in the grey matter are so clear and well defined, that if a specimen from any one of these be placed in the field of the microscope, they can at once, and without hesitation, name the animal from whence it has been taken. Mr. Lockart Clarke has shewn that *certain structural differences* are seen in the grey matter of the convolutions of the anterior, middle, and posterior lobes of the brain. And this fact is highly interesting and significant, when we bear in mind that it is upon the vesicular substance or grey matter of the encephalic ganglia, *as its substratum*, that the mind is dependant for the manifestation of all its activities in this life, and moreover, that it is here that the ultimate molecular changes take place, which are so intimately connected with the manifestation of mental phenomena. Again, as complexity of function is necessarily connected with complexity of structure, and as the anterior lobes are the seat of the highest and most complex psychical activities, it is but reasonable to expect what Mr. Lockart Clarke has demonstrated to exist, viz., the greatest complexity in the machinery of their action, that is, in the nerve-cells, nerve-fibres, and circuits in the grey matter of the anterior lobes.

Dr. Beale has succeeded in demonstrating the connection between the nerve-cells and the very finest fibres in the grey substance of the convolutions; and he maintains that the central cells of every nervous instrument form with the peripheral nerve-cells, and connecting nerve-fibres *uninterrupted circuits*, and that all nerve-cells are connected with, or gave origin to, at least two fibres; and, although, in the adult, the cells are not often connected with those cells which are nearest to them, there is no reason for supposing that the nerve cells influence any nerve fibres, save those which are structurally continuous with them.

It now remains for me, in conclusion, to advert to the historical bearings of our inquiry,—to the evidence which is furnished by history of the conversion in time of one type of humanity into that of another, under the influence of outward circumstances, social states, and intellectual culture. But, first of all, let me observe, the universally acknowledged physiological law, that the healthy functional activity of an organ is essential to its highest

development, is equally as true of the brain as it is of any other of our bodily organs, so that in the changing forms of the human skull in each of the typical races we have evidence—*outward and visible signs*—from which we can safely and without hesitation infer the *elevation or degradation* of the race. Let us, first, then, briefly glance at the Negro race, about which there has been so much discussion of late, and whose fate and destiny in *America* at the present time, are exciting so much interest throughout the whole civilised world.* As to their past history there,—when we

* “The Negro child,” says Pruner-Bey, “is born without prognathism, but with a totality of features, which, though characteristic for the soft parts, are not yet expressed on the skull. The Negro, the Hottentot, the Australian, the New Caledonian, do not, with regard to the osseous system, exhibit the differences which arise subsequently. The young Negro possesses a pleasant physiognomy up to puberty, which commences in girls between the tenth and thirteenth, and in boys between the thirteenth and fifteenth year. This is followed by a rapid transformation in the forms and proportions of the bony skeleton. The transformation proceeds in the cranium and the face; the jaws predominate without an adequate compensation in the cranium. Whilst in the white man the gradual increase of the jaws and the facial bones is not only equalled, but exceeded, by the development, or rather enlargement of the brain, and especially of the anterior lobes; the reverse is the case in the Negro. The central frontal suture closes in the Negro in early youth, as well as the parietal part of the coronal suture. With advancing age the central portion of the coronal suture, the sagittal suture, and all the parietal sutures close, nearly simultaneously. The lambdoidal remains open the longest, especially at the apex. Generally speaking the suture in the Negress closes sooner than in the Negro.” “It is undeniable,” says Dr. Carl Vogt, “that the sudden metamorphosis, which at the time of puberty takes place in the Negro, is intimately connected with psychical development. The Negro child is not, as regards the intellectual capacities, behind the white child. All observers agree that they are as droll in their games, as docile, and as intelligent as white children, where their education is attended to, and where they are not, as in the American Slave States, intentionally brought up like cattle, it is found that the Negro children in the schools, not only equal but even surpass the white children in docility and apprehension. But no sooner do they reach the fatal period of puberty than, with the closure of the sutures and the projection of the jaws, the same process takes place as in the ape. The intellectual functions remain stationary, and the individual, as well as the race is incapable of further progress.” He goes on to say,—“The grown-up Negro partakes, as regards his intellectual faculties, of the nature of the female child, and the senile white. He manifests a propensity for pleasure, music, dancing, physical enjoyments, and conversation, while his inconstancy of impressions and of all the feelings are those of a child. Like the child the Negro has no soaring imagination, but he peoples surrounding nature, and endows even lifeless things with human or supernatural powers. He makes himself a Fetish of a piece of wood, and believes that the ape remains dumb lest he should be compelled to work. The general rule of the slaveholder is, that slaves must be treated like neglected and badly brought-up children. The Negro resembles the female in his love for children, his family, and his cabin. He resembles the old man in his indolence, apathy, and his obstinacies. Temperate in common things, the negro

call to mind how the Negroes have been kept in ignorance and subjugated to the bondage of slavery in the Southern States, and how in the Northern they have been despised and treated as a degenerate race, it must be admitted that their social position in America has been anything but favourable to the furtherance of the development of their moral and intellectual endowments. "Still," says Dr. Carpenter, "according to the concurrent testimony of disinterested observers, not only in the United States of America, but also in the West Indies, an approximation in the Negro physiognomy to the European model is progressively taking

becomes intemperate, if not kept within certain bounds. He knows not steady work, cares little for the future; but his great imitative instinct enables him to become a skilful workman and an artistic imitator. In his native country the Negro is shepherd or agriculturist; some tribes understand working metals; others carry on trade, not without cunning. Some tribes have founded states, possessing a peculiar organisation; but, as to the rest, we may safely assert that the whole race has, neither in the past nor in the present, performed anything tending to the progress of humanity, or worthy of preservation." Mr. Lille Geoffroy, of Martinique, so generally cited in proof of the artistic and scientific capacity of the Negro, being an engineer, a mathematician, and a corresponding member of the French Academy, he asserts, was not a pure Negro, but a Mulatto. Vogt's *Lectures*, pp. 191-2.

I cannot quote these opinions and observations of Drs. Pruner-Bey and Carl Vogt without, at the same time, recording my own dissent from their *dogma of finality* in respect to the intellectual status of the Negro. Progression is the order of nature, and I believe in the progressive improveability of the Negro race. I am aware Gratiolet has pointed out the fact, that the closing of the sutures in the cranium of the Negro, follows a different law to that which obtains in the skull of the white man, viz., that the frontal and coronal close earlier than the posterior sutures,—the reverse of what takes place in the white; but this is just, as, I think, what *à priori* reasoning, in the case of the Negro, would lead us to expect. In the present paper, I set out with the postulate, that it is the development of the cerebrum which moulds and fashions, giving configuration, shape and volume to its bony envelope, the skull. Now when we contrast, at the age of puberty, the incessant activity of the animal propensities, and of the personal and social affections, exhibited as the mental attributes of the Negro race, with the total absence of all educational discipline and intellectual culture, properly so called, can we wonder, under such circumstances, that the sutures should close earlier over the stagnant centres of intellectual action, than in the region of the middle and posterior lobes, where the personal, affectional, and social activities are in such constant excitement? When the Negro is freed from the fetters of slavery and brought fully under the ameliorating influences of a higher civilisation, better adapted for the development of his intellectual nature, his reasoning and reflecting powers—then, but not till then, and even this may not be until after the lapse of many successive generations, the closure of the sutures in the skull of the Negro will be found to present no exception, *nisi fallor*, to the law which obtains in the case of the white man. It would be interesting to investigate this point in relation to certain of the inhabitants of Leitrim, Sligo and Mayo in Ireland.

place in instances in which, although there has been *no* intermixture of European blood, the influence of a higher civilisation has been powerfully exercised for a lengthened period of time. This is particularly the case with Negroes employed as domestic servants. Dr. Hancock, a most intelligent physician of Guiana, even asserts that it is frequently not at all difficult to distinguish a Negro of pure blood belonging to the Dutch portion of the colony from another belonging to the English settlements, by the correspondence between the features and expression of each, and those which are characteristic of their respective masters. This alteration, too, is not confined solely to the *change* in the form of the skull, or to a diminution in the projection of the jaws, striking as these changes are, but is also seen in the general figure and in the form of the soft parts, as the lips and nose. The change is most apparent in such as are brought into closest and most habitual relations with the Whites, as by domestic servitude, but without any actual intermixture of races, which would, indeed, at once be betrayed by the change of complexion and by the more strongly marked indications of *hybridism*. Sir Charles Lyell, from personal observations, bears his testimony to the same conclusions. He had the assurance from medical men residing in the Slave States during his tour in America, that a gradual approximation is taking place in the configuration of the head and body of the Negroes to the European model, each successive generation exhibiting an improvement in those respects. But, surely, it has been reasonably asked, is it at all likely that we should find after a transplantation of only three hundred years, anything like a complete reversion in the transplanted type in the West Indies or America, when for upwards of three thousand years in Africa the Negroes have been under certain climatic influences and social states, the results of which have been defined and strengthened by hereditary conditions? It has been usual to refer to those marvellous pictures whose preservation in the tombs and temples of Egypt has revealed to us so much of the inner life of one of the most anciently civilised nations of the world, in illustration and proof of the fixity of the type of the head and physiognomy of the Negro race; and, it must be admitted, that the identity is striking between these representations and the existing Ethiopians, both in respect to the black and the red African races. But it must be remembered, that the Negroes in Egypt were then in the bondage of slavery, and it cannot be a matter of surprise, that races who continue to inhabit their native localities and maintain their barbarous and savage habits of life, should present a permanency in their physical characters, and especially in the types of their cranial configurations. But, still, among the Africans, we have abundant proof from outward agencies—climatic

and malarious—of degradation of type. It has been well observed by our friend Mr. Burke, that Negro Africa is a large ethnic centre in which there are a great variety of types. We have become familiar with some of the very lowest of those types, and this has tinged the whole range of our intellectual notions with respect to the Negro. But there are places in Africa where the difference between the Negro and the European is extremely slight, comparatively speaking, and there are other places where it is extremely great. The contrast between them in their cranial configurations is equally striking.

Mr. H. Winwood Reade, in his work *On Savage Africa*, recently published, maintains that the Negro forms an exceptional race in Africa. He observes, indeed, that "They who deny that the Negro type has been produced by natural causes, have alleged that there are two distinct races in Africa, the *red* and the *black*, and that they inhabit the same localities. But," says he, "we must bear in mind, that a series of mountain terraces run along the whole length of Western Africa, and that between them and the sea are low and malarious swamps. The mountains are inhabited by the true Africans—a red-skinned race. New tribes of these descending to the swamps have become *degraded* both in body and mind, and the type has become completely changed." The evidence of degradation in the form of the skull is manifest. He adds, "The whole of the western coast and a great portion of the eastern are inhabited by Negroes. The slaves which have been imported into the New World were almost exclusively from these regions, and the slaves even among Negroes themselves always present a lower type than that of the surrounding population. In Equatorial Africa, the bush tribes are the most degraded. On the sea-coast, between the Gaboon and Cape Lopez, they present the typical characteristics of the Negro. But in the higher and healthier localities, classes of the same tribes have a lighter complexion, less prognathous development, and more facial intelligence. The Fans, who inhabit the mountain terraces, are altogether of a different complexion from the sea-coast tribes. In the low swampy land at the mouth of the Congo, typical Negroes abound, and there again, on reaching a higher soil, we find a different class of people, who are scarcely even black.

"Along the swampy coast of Sierra Leon, the debased Negro type prevails; but at Sierra Leon the country rises and the type rises with it. The natives of Free Town are tall and handsome, with intelligent faces. One of the Vie tribe, near Cape Mount, invented a written language, as was discovered by Lieutenant Forbes in 1849. Central Africa is prolific, and perhaps," says Mr. Reade, "an over populated country; for, notwithstanding the loss of life in the swamps, and that her children have blackened half America, the lowlands are

still well populated. A stream of life still pours over the mountain wall, and the sources of this stream must be very abundant."

Of this degraded and too often despised race, I trust we will all join issue with Mr. Reade, when he adds,—“Let us call the Negroes our children. Let us educate them carefully, and, in time, we may elevate them; not to our own level—that, I fear, can never be—but to the level of those from whom they have fallen.

“If we wish to know what they have been, and to what we may restore them, look at the portraits which have been preserved of the ancient Egyptians. And in those delicate and voluptuous forms; in those round, soft features; in those long, almond-shaped, half-closed, languishing eyes; in those full pouting lips, large smiling mouths, and complexions of a warm and copper-coloured tint, we will recognise the true African type,—the women and men of the Old World, of which the Negroes are the base, the depraved caricatures.”*

Dr. Prichard has also remarked, “If we trace the intervening countries between Egypt and Senegambia, and carefully note the physical quality of the inhabitants, we shall have no difficulty in recognising almost every degree or stage of deviation successively displayed, and shewing a gradual transition from the characters of the Egyptians to those of the Negro, without any broadly-marked line of abrupt separation.”

With the following significant remarks from Dr. Carpenter, I shall dismiss the further consideration of the Negro race:—“It is not a little remarkable,” says he, “that the earliest civilisation of which we have any distinct traces, in the western portion of the Old World,—perhaps, the very first development of the arts of life, and of a spiritual philosophy which man has witnessed,—should have presented itself in a race which was not only *African* in its locality, but also in its affinities, such being demonstrably the character of the *ancient Egyptians*. Yet to this race the civilisation of Greece, of Rome, and of Western Europe, may be, in a great measure, ascribed; and long after the time, when its power and intelligence had gained their highest state of development, the progenitors of the Anglo-Saxon race, both in this country and in Germany, were in a state of barbaric ignorance and brutalism.”†

Turning next to the history of the Asiatic or Mongolian races, we find evidence, as displayed in their cranial configurations, both of elevation and degradation of type from the influence of out-

* “Savage Africa”. By W. Winwood Reade. Smith and Elder: 1863.

† Dr. Carpenter on the Varieties of Mankind, in Dr. Todd’s “Cyclopædia of Anatomy and Physiology”.

ward circumstances and social states. The Turks, the Magyars, and the Bosjesmans, present examples of such, and cases in point.

The Turks are an eastern people, and a nomadic race, with characteristic pyramidal heads; to the present time the eastern Turks retain the nomadic habits of their ancestors, and are associated with the northern Asiatic group of nations, not only in geographical position, but in physical characters, cranial conformation, and habits of life. On the contrary, the Turks of Europe and of Western Asia differ so widely from these, and especially in their cranial developments, agreeing in their physical characters so closely with the European model, that they have been referred to a Caucasian and not a Mongolian race; but Dr. Prichard has shewn that both *historical* and *philological* evidence abundantly proves that the western Turks originally belonged to the same Central Asiatic group of nations with which the eastern Turks are still associated. I am aware, that this change from the pyramidal to the elliptical form of the skull, has been attributed to the result of the intermixture of the Turkish race with that of the countries they have conquered, or by the introduction of Georgian and Circassian slaves into their harems. But, I think, with Dr. Prichard, that the cause assigned is inadequate to the effect. For we know that in the Christian countries subjugated by the Turks, the conquering and the conquered races have been kept separate by mutual hatred, fostered by difference in religion and manners; while any improvement effected by the introduction of Georgian and Circassian slaves must have been confined to the higher classes, who could afford to purchase them. But, in either case, admitted to its utmost possible extent, the result would have been a hybrid or intermediate race, instead of the entire substitution of a new type for the original one. And so complete a change can only be attributed to the effects of civilisation and social improvement.

The Magyar race, which forms a large part of the population of Hungary, including the entire nobility of that country, and which is not, in physical or mental characters, inferior to any in Europe, is proved both by historical and philological evidence, to have been a branch of the great Northern Asiatic stock, which was expelled about ten centuries ago from the country which it then inhabited (which bordered on the Uralian Mountains), and, in its turn, *expelled* the Sclavonian nations from the fertile parts of Hungary, which it has occupied ever since. Having thus exchanged their abode from the most rigorous climate of the old continent,—a wilderness in which Ostiacks and Samoides pursue the chase only during the mildest season,—for one in the south of Europe, amid fertile plains abounding in rich harvests, the Magyars gradually laid aside the rude and savage habits which

they are recorded to have brought with them, for a more settled mode of life. In the course of one thousand years, their type of cranial conformation has been changed from the pyramidal to the elliptical, and they have become a handsome people, of fair stature and of regular European features, with just enough of the Tartar cast of countenance, in some instances, to recall their origin to mind. Now, here again, it has been said, that the intermixture of the conquering with the conquered race, has had a great share in bringing about this change; but, let it be remembered, that the Magyars pride themselves greatly on the purity of their descent, and the small infusion of Slavonic blood which may have taken place from time to time, is by no means sufficient to account for the complete change of cranial type, which now manifests itself among them.

While thus, in the Mongolian race, under the ameliorating influence of civilisation, the Turks and Magyars present us, on the one hand, with instances of elevation of type, as displayed in their cranial contour and its lofty bearing, in the brutalised and savage Bushmen of the Cape; on the other hand, we see deterioration and debasement carried to the uttermost limits of human degradation, as seen in their prognathous development. The Bushmen are a degraded caste of the Mongolian Hottentot race. The process is but too well known of the conversion of Hottentots into Bushmen. The change of a mild, confiding, and an enterprising race of shepherds, into fierce, suspicious, and vindictive savages, who issue from the fastnesses of their rocky deserts only to plunder and destroy, has been witnessed even within the present generation, as the results of the encroachments of European civilisation on the one hand, and of the Kaffirs on the other.

Let us turn, lastly, to the highest of the human races—the so-called Caucasian race, and to the bearings of our inquiry upon ourselves; for it cannot be denied, that there is amongst us, unmistakeable evidence of degradation of type, as the consequence of long-continued want, ignorance, squalor, and moral degradation. We need not go beyond the confines of the United Kingdom for examples of the different cranial conformations, though it must be admitted that the prognathous and nomadic are exceptional forms. Still they do exist. An intelligent writer, in No. 48 of the *Dublin University Magazine*, says, "There are certain districts in Leitrim, Sligo, and Mayo, chiefly inhabited by the descendants of the native Irish driven by the British from Armagh and the south of Down about two centuries ago. These people, whose ancestors were well-grown, able-bodied, and comely, are now reduced to an average stature of five feet two inches, are pot-bellied, bow-legged, and abortively featured; and they are especially remarkable for open projecting mouths and prominent

teeth and exposed gums, their advancing cheek-bones and depressed noses, bearing barbarism in their very front. In other words, within so short a period, they seem to have acquired a prognathous type of skull, like the Australian savages."

It has, indeed, been observed:—"It is marvellous how close is the physical resemblance between these lowest classes of the Irish population and the natives of Australia, as depicted in the voyage of the *Astrolabe*. In the hordes of wretched Irish, whom the famine a few years ago drove to seek subsistence in the sea-ports and manufacturing towns of Great Britain, every gradation was perceptible, from the *really* noble type of countenance and figure seen in some of them, to that utterly debased aspect which can only be looked at with disgust." As to the nomadic vagabond tribes which infest our streets and are found in every civilised community, there may be noticed among them a certain degree of regression to the pyramidal type. By that acute observer, Mr. Henry Mayhew, in his *London Labour and London Poor*, it has been well remarked, "That among them, according as they partake more or less of this pure vagabond nature, doing nothing whatever for their living, but moving from place to place, preying on the earnings of the more industrious portions of the community, so will the attributes of the nomadic races be found more or less marked in them; and they are all more or less distinguished by their *high cheek bones and protruding jaws*; thus shewing that kind of mixture of the *pyramidal* with the *prognathous* type, which is to be seen among the most degraded of the Malayo-Polynesian races." There is, unfortunately, scarcely a civilised nation, on the bosom of which there does not exist a degraded caste,—an outcast population as reckless and prone to the indulgence of their worst passions, as these degraded Malayo-Polynesian races, and who are only restrained from breaking loose by external coercion.

But, still, while thus on the one hand we have among ourselves indubitable evidence of deterioration of type, the melancholy spectacle of the conversion of the *elliptical* into the *prognathic*, as the effect and consequence of long-continued want, squalor, ignorance, and moral degradation, we must not shut our eyes, on the other hand, to the pleasing and equally well attested fact of cranial alterations for the better, under the influence of improved social conditions and higher intellectual activities. The limits of this paper will not permit me to enlarge upon these. Nor is it necessary. For, if the anterior lobes of the brain be the seat of the intellectual faculties, and if the healthy and increased exercise of the functional activity of our bodily organs further and increase their development and size, then the improvement may be as conspicuous in the lofty bearing and general contour of the head as

it is in the enlargement of the deltoid muscles in the arm of the hard-working blacksmith. Nor, in proof of this, are there wanting casts taken from the same heads at different periods of life.

In the museum of the late Mr. De Ville, in the Strand, there were upwards of fifty of such illustrative examples, highly interesting and instructive, as pointing out and recording, beyond all controversy, certain changes in the form and relative proportions of the anterior lobes of the brain, in connection with certain intellectual pursuits.

But, to conclude,—Dr. Paul Broca's cranial investigations of races at Paris, not only establish the fact, that individuals engaged in art and science possess a higher cranial capacity than mere labourers, but also warrant the inference from a comparison of the skulls of the twelfth with those of the nineteenth century, that the capacity of the cranium of the Parisian population has increased,—a fact, which, though it may not in itself, as he observes, be sufficient to establish a rule, yet affording an index, and when supported by other facts, justifying the inference, that by progressive civilisation, the cranial capacity of a race may, in the course of centuries, become gradually increased.

